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DIRECTORY OF FOREST GENETICS RESEARCH AND EDUCATION  
IN THE UNITED STATES AND CANADA

Jonathan W. Wright

Northeastern Forest Experiment Station  
Forest Service, U. S. Dept. Agriculture

1955

Publication of the  
Committee on Forest Tree Improvement  
Division of Silviculture  
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by *William, 1916 -*  
Jonathan W. Wright 1/

Northeastern Forest Experiment Station  
Forest Service, United States Department of Agriculture



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1/ Contribution from the Northeastern Station's Division of Forest Management Research, I. H. Sims, chief. Mr. Wright is stationed at the Morris Arboretum, University of Pennsylvania, Philadelphia, Pennsylvania. Copies of this publication are obtainable from the Director, Northeastern Forest Experiment Station, U. S. Forest Service, U. S. Department of Agriculture, 102 Motors Avenue, Upper Darby, Pennsylvania.



## FOREWORD

In recent years there has been an upsurge of interest in forest tree improvement research in the United States and Canada. It is no longer possible for even a specialist to keep track of all developments in the field. Therefore, in the fall of 1954 the Committee on Forest Tree Improvement of the Society of American Foresters suggested that the author prepare a directory of research and educational activities in forest tree improvement. The members of this committee are Scott S. Pauley, chairman; John W. Duffield, Harry A. Fowells, F. I. Richter, Jonathan W. Wright, Stephen N. Wyckoff, and Bruce J. Zobel. All have been very helpful in the preparation of this directory.

Grateful acknowledgment is made to the Maria Moors Cabot Foundation for Botanical Research, Harvard University, for contributions covering printing and initial mailing costs of this publication.





## EDUCATION

This section was prepared from responses to letters sent to all schools of forestry in the United States and Canada and to several other schools that were believed to offer training in forest genetics.

The schools that are listed offer at least a one-semester course in forest genetics; a one-semester course in genetics that is slanted somewhat toward forestry, and is taken by more than occasional foresters; or special facilities for graduate research in forest genetics. Many schools that are not listed offer excellent separate training in forestry and genetics. The committee has not attempted to rate the quality of instruction offered by either the listed or unlisted schools.

Only those staff members who teach a course in forest genetics or a course in genetics slanted toward forestry are mentioned in the descriptions of the schools.

For most schools it is possible to get a good idea of the thesis problems available to students in forest genetics by referring to the research section of this directory.

BRITISH COLUMBIA, UNIVERSITY OF. Faculty of Forestry in cooperation with the Department of Biology and Botany, Vancouver, British Columbia, Canada. Staff, Faculty of Forestry: G. S. Allen (1945--), P. G. Haddock (1953--). Staff, Department of Biology and Botany: Kathleen Cole, A. H. Hutchinson. The Department of Biology and Botany offers a course in forest genetics that is required of all second-year forestry undergraduates. This department also offers elective advanced courses in genetics to forestry students. The Faculty of Forestry offers elective graduate courses in forest genetics and forest tree seed. Graduate work leading to the Ph.D. degree (major in genetics) is offered by the Faculty of Graduate Studies with the cooperation of the above departments. Graduate students in forest genetics can use the facilities of the Science Service, Canada Department of Agriculture, Victoria, British Columbia, Canada.

CALIFORNIA, UNIVERSITY OF. Berkeley 4, California. Graduate students interested in forest genetics may register in the School of Forestry, the Genetics Department, or the Botany Department. Such students usually take their degree in botany, physiology, or genetics. No courses in forest genetics are offered, although some of the genetics courses are slanted toward wild plants or forest trees. Graduate students can use the plant material and facilities of the California Forest and Range Experiment Station in their thesis work.

FLORIDA, UNIVERSITY OF. School of Forestry, Gainesville, Florida. T. O. Perry (1952--). One undergraduate course and two graduate courses in forest genetics are offered in the School of Forestry. Courses in genetics are offered in various departments. It is expected that fellowships will be offered Ph.D. candidates who are interested in forest genetics.

GEORGIA, UNIVERSITY OF. George Foster Peabody, School of Forestry, Athens, Georgia. Staff: M. Reines (1954--). The School of

Forestry is prepared to give instruction leading to a Master's degree in silviculture with a minor in forest genetics. Instruction in genetics and related subjects is offered in other departments. Graduate students can work on thesis problems that bear on the school's tree-improvement program.

IOWA STATE COLLEGE. Forestry Department, Ames, Iowa. General genetics (Genetics Department) is a required course for forest-management majors. Forest genetics is taught as a part of an advanced silvics course elective to seniors and graduate students. The Ph.D. degree in forest genetics can be earned as a major divided between silviculture and genetics, or as a major in genetics with a minor in silviculture. Thesis research is supervised by either department.

HARVARD UNIVERSITY. Cambridge, Massachusetts. Staff: Scott S. Pauley (1947-1955). Informal instruction in forest genetics and other forestry subjects is offered at the Harvard Forest, Petersham, Massachusetts. Formal instruction in genetics and related subjects is offered in various departments in Cambridge. Graduate students working toward an M.F. degree spend 1 year working on a thesis problem in Petersham. Graduate students working toward the Ph.D. degree usually divide their time between Petersham and Cambridge, obtaining a degree in botany. The facilities of the Maria Moors Cabot Foundation, Harvard Forest, Arnold Arboretum, and other departments of the University are available to students working on thesis problems.

LAVAL UNIVERSITY. Faculte d'Arpentage et de Genie Forestier, Quebec, Canada. Staff: Levi Chouinard (1953--). An elementary course in plant genetics is required of all second-year forestry students. A one-semester course in forest genetics (lectures in French) is required of all fifth-year forestry students.

MINNESOTA, UNIVERSITY OF. Institute of Agriculture, School of Forestry, St. Paul 1, Minnesota. Staff: Scott S. Pauley (1955--). One course in forest genetics, elective to advanced undergraduates and to graduate students, is offered in the School of Forestry. Graduate students in forest genetics are registered in the Graduate School and can earn their advanced degree as a divided major between forestry and plant genetics or as a major in forestry with a minor in plant genetics. The facilities of the Central Agricultural Experiment Station, Cloquet Experimental Forest, Hormel Institute, Mayo Institute, and the Lake States Forest Experiment Station are available to graduate students doing thesis research work.

NORTH CAROLINA STATE COLLEGE. Raleigh, North Carolina. The College is prepared to offer Master's and Ph.D. degrees in forest genetics in various fields of specialty. Instruction in forestry and in genetics and supervision of thesis research work will be undertaken by the School of Forestry, the Genetics Faculty (some 28 men in various departments), and the Institute of Statistics.

PENNSYLVANIA STATE UNIVERSITY. School of Forestry, State College, Pennsylvania. A course in general genetics is elected by a few



forestry students. Graduate students in silviculture can take a minor in genetics.

TEXAS AGRICULTURAL AND MECHANICAL COLLEGE. College Station, Texas. Staff: Bruce J. Zobel (1951--). The College offers courses in various fields of botany but not in forestry. Ph.D. candidates in forest genetics (so far all have been forestry graduates) work on basic research problems to implement the forest tree improvement program of the Texas Forest Service. Five fellowships are available for Ph.D. candidates.

WASHINGTON, UNIVERSITY OF. College of Forestry, Seattle 5, Washington. Genetics instruction is given in other departments. Graduate students in forest genetics can earn the Ph.D. degree in forestry with a major in genetics. Thesis work is supervised by the Botany Department and by the College of Forestry.

YALE UNIVERSITY. School of Forestry, New Haven 11, Connecticut. Staff: Francois Mergen (1954--). Elective courses in forest genetics are offered to graduate students in silviculture and management in the School of Forestry. Instruction in genetics and related subjects is offered in other departments. The Master's or Ph.D. degree in forest genetics can be earned in the School of Forestry. Scholarships, fellowships, and assistantships are available. Most of the thesis research work in forest genetics will be done at the John A. Hartford Memorial Research Center, Valhalla, New York.

### RESEARCH

An abbreviated description is given for every agency in the United States and Canada that is known to be doing forest genetic or forest tree improvement research that would come under one of the following headings:

- |      |   |
|------|---|
| Chem | Chemistry: studies of the chemistry of trees used in genetic tests.   |
| Clon | Clonal tests: the making of clonal tests ordinarily implies that there has been some preliminary selection and that the techniques of vegetative propagation have been satisfactorily worked out. |
| CP   | Controlled pollinations aside from those included under racial or species hybridization.  |
| Cyt  | Cytology.   |
| Emb  | Embryology or embryogeny, if conducted in material used in genetic tests.   |
| Ex   | Exotics, if studied genetically or tested on a large scale in forest plantings.   |
| FI   | Flower- or fruit-induction experiments.   |

Ind	Individual tree selection: such selection work is included only if it is to be followed by progeny tests or by clonal tests.
Orch	Seed orchard establishment, using trees believed to be above average genetically.
Phys	Physiology, if studied on trees used in genetic tests.
Pollen	Special studies of tree pollen.
Poly	Polyploidy: the production, occurrence, and properties of polyploids.
Rac	Racial tests.
RH	Racial Hybridization: controlled pollinations between races of the same species, and the testing of the hybrids produced.
SH	Species hybridizations: controlled pollinations between different species, and the testing of the hybrids produced.
Tax	Taxonomy, if studied in conjunction with genetic studies.
Veg	Vegetative propagation.
Wood	Studies of the wood properties of trees used in genetic tests.

Some special types of work not included in the above list are also described. One-parent progeny tests are not included separately; they are considered an adjunct to other types of work.

In general, projects that involve cooperation among several agencies are listed only under those agencies that are responsible for evaluating the results of the project. Thus many forest industries that actively cooperate with research agencies in the establishment of test plantings but do not contemplate publishing on the results are listed only as cooperators. Only the major cooperation is listed under each agency.

Under each agency all personnel who have been physically engaged in forest tree improvement work for any considerable period of time are listed alphabetically. The dates after each man's name indicate the period during which he was engaged in such work; they do not necessarily indicate his total period of employment with the agency. Relatively few of the personnel listed are engaged full-time in tree improvement research.

Work on certain genera such as *Dex* and *Caragana* was included in spite of the fact that these genera are not always considered as forest trees. Such inclusions are justified mainly because the work involves a forestry approach more than it does a pomological, horticultural, or agronomic approach.



The years following each species or genus indicate the period during which genetic research was conducted on that species or genus. Active research (measurement and evaluation of the plantings, publication of results) may have been confined to a short period within the total span of years indicated. This is especially true of many of the racial studies started a long time ago.

An asterisk (\*) in front of the abbreviation for a particular type of work indicates that some member of the agency has published reports on that type of work. Many of these publications are available by writing to the agency concerned.

The description of each regional committee or conference on tree improvement includes the name of one more or less permanent officer to whom interested people can address correspondence.

1. ALABAMA POLYTECHNIC INSTITUTE, Department of Forestry, Auburn, Alabama. Field tests in Coosa and Autauga Counties and near Auburn. George I. Garin (1948--), A. R. Gilmore (1954--). Cupressus arizonica (1948--): \*Rac, \*Veg, Ex. Pinus elliottii (1935--): \*Rec. Pinus echinata, palustris, and taeda (1952--): Rac (in cooperation with Southern Forest Tree Improvement Committee). Field tests of Placerville hybrids. Pinus taeda (1954--): Ind, Wood.

2. ARKANSAS, UNIVERSITY OF, Department of Horticulture and Forestry, Fayetteville, Arkansas. Field plantings at Hope, Arkansas. Cooperation with the Southern Forest Experiment Station. Pinus taeda (1955--): Rac.

3. BOYCE THOMPSON INSTITUTE FOR PLANT RESEARCH, INC., Yonkers 3, New York. Clyde Chandler (1948--). Larix decidua, laricina, and leptolepis (1948--): Rac, SH, Ind, CP, Ex, Veg, Poly. Castanea hybrids: field trials. The arboretum contains about 100 species, principally of Fraxinus and hardy conifers.

4. BRITISH COLUMBIA FOREST SERVICE, Research Division, Victoria, B. C. Alan Orr-Ewing (1952--). Pseudotsuga menziesii (1952--): Ind, \*CP, Rac, Clon, \*selfing.

5. BRITISH COLUMBIA, UNIVERSITY OF, Faculty of Forestry and Department of Biology and Botany, Vancouver, British Columbia, Canada. Cooperation with Oregon State Board of Forestry. G. S. Allen (1945--), B. G. Griffith (1937--), P. G. Haddock (1953--), A. H. Hutchinson (1917-24), A. L. Orr-Ewing (1951-54), T. M. C. Taylor (1945--). Abies spp. (1954--). Keteleeria fortunei (1917): \*Cyt. Picea glauca and engelmannii (1951-52): Tax, SH. Pseudotsuga menziesii (1945--): \*CP, Cyt, Fl, Phys, \*selfing, Rac. Pseudotsuga menziesii, Picea sitchensis, Thuja plicata (1937-40): \*Veg.

6. IDA CASON GALLAWAY FOUNDATION, Hamilton, Georgia. Cooperation with Southeastern Forest Experiment Station. Eitel Bauer (1950--), James T. Greene (1950-1954), R. A. Jordan (1954--). Pinus

elliottii, palustris, taeda, and echinata (1950--): Ind, CP, SH, Rac, Veg, FI, Orch, Wood, Pollen, Ex.

7. CANADA DEPARTMENT OF AGRICULTURE, Forest Nursery Station, Indian Head, Saskatchewan. W. H. Cram (1947--). Caragana arborescens and related species (1948--): \*CP, \*Veg, \*Clon, \*Cyt, \*Pollen, \*Ex, seed orchards of self-incompatible selections. Picea pungens and glauca (1949--): \*Ind, \*CP, \*Ex, seed studies. Pinus sylvestris (1947; plantings started in 1908): \*Rac, Ind. Populus spp. (1949--): SH, Clon, Ind, Ex.

8. CANADA DEPARTMENT OF AGRICULTURE, Horticultural Division, Central Experiment Farm, Ottawa, Ontario. A. W. S. Hunter (1949--). Ulmus americana (1949--): Ind, SH, Veg, Poly; emphasis on resistance to Dutch elm disease.

9. CANADA DEPARTMENT OF AGRICULTURE, Science Service, Botany and Plant Pathology Laboratory, Science Service Building, Ottawa, Ontario. R. J. Moore (1947--). Caragana spp. (1947--): Cyt, SH, Tax.

10. CANADA DEPARTMENT OF AGRICULTURE, Forest Biology Division, Science Service, Forest Pathology Unit, Forest Biology Laboratory, 409 Federal Building, Victoria, B. C. Cooperation with British Columbia Forest Service. Field plantings at Duncan, British Columbia. W. A. Porter (1951--). Pinus monticola (1951--): \*Ind, \*Veg, \*Clon, Ex; emphasis on resistance to blister rust.

11. CANADA, DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES, Division of Forest Research, Forestry Branch, Petawawa Forest Experiment Station, Chalk River, Ontario. Cooperation with Ontario Department of Lands and Forests, Canadian Pulp and Paper Association and the K. V. P. Co., Ltd. J. L. Farrar (1946-1950), C. C. Heimburger (1937-1946), M. L. Holst (1950--), L. P. V. Johnson (1937-1946), C. W. Yeatman (1954--). Picea spp. (1937--): \*Rac, CP, \*Veg, Clon, \*SH, RH, \*FI, Orch, Tax, \*Ind, Ex. Pinus resinosa, banksiana, sylvestris and other hard pines (1937--): \*Rac, CP, \*Veg, Clon, SH, \*RH, \*FI, Tax, Ind, \*Ex. Pinus strobus (1937--): \*Rac, \*Ind, SH, Ex. Populus spp. and hybrids (1937--): \*Clon, SH, Veg.

12. CANADA DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES, Division of Forest Research, Forestry Branch, Valcartier Forest Experiment Station, R. R. 2, Lorretteville, Quebec. R. G. Ray. Picea abies and rubens, Pinus banksiana (1952--): Rac.

13. CANADA DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES, Division of Forest Research, Forestry Branch, Acadia Forest Experiment Station, P. O. Box 843, Fredericton, New Brunswick. H. G. MacGillivray (1952--). Picea spp. (1952--): \*SH, Rac, Ind, Veg, Clon. Pinus spp. (1952--): Rac, Ex. Abies balsamea (1952--): Rac, Veg; emphasis on spruce budworm resistance.



14. CONNECTICUT AGRICULTURAL EXPERIMENT STATION, Box 1106, New Haven 4, Connecticut. Cooperation with the Division of Forest Pathology (1923-1953) and the Brooklyn Botanic Garden (1929-1947). Most of the field work is done at Mount Carmel, Connecticut. A. H. Graves (1929--), Hans Nienstaedt (1947-1955), Jerry Olson (1952--). Castanea spp. (1929--): \*SH, \*Fl, \*Veg, \*Pollen, CP, \*Ex, \*Ind, \*Clon, \*Chem. Tsuga spp. (1952--): Rac, Ind, SH, CP, Pollen, Cyt, Veg, Phys, photoperiodism.

15. FLORIDA, UNIVERSITY OF, School of Forestry, Gainesville, Florida. Wang, Chi-Wu (1954--), Thomas O. Perry (1952--). Pinus spp. (1952--): Rac, \*Ind, SH, RH, CP, Fl, \*Clon, Orch. Taxodium distichum (1953--): SH, Veg, Tax, Pollen. Acer rubrum (1954--): Rac, Ind, CP, Veg, Phys. Liquidambar styraciflua (1954--): Ind, CP, Pollen. Betula (1951--): Rac, Ind, RH, CP, Pollen.

16. FOREST GENETICS RESEARCH FOUNDATION, American Trust Building, Berkeley 4, California. Stephen N. Wyckoff (1953--). A foundation for support and encouragement of forest tree improvement in the United States, with particular interest in basic forest genetics research, interregional forest tree improvement projects, and advanced education in forest genetics.

17. FOREST GENETICS STEERING COMMITTEE, Northern Rocky Mountain Region. Organized in 1950, comprising representatives from Montana State University, University of Idaho, Washington State College, United States Forest Service, Intermountain Forest and Range Experiment Station and Regional office. The committee holds annual meetings and has sponsored the publication of papers on the selection of superior phenotypes (1952), selected bibliography (1952), and summary of forest genetics research in the region (1954).

18. FOREST INDUSTRIES TREE NURSERY (owned by West Coast Lumbermen's Association and operated by Industrial Forestry Association), Box 172, Nisqually, Washington. J. W. Duffield (1954--). Pseudotsuga menziesii (1954--): Ind, Rac, Veg, CP, Orch. Tsuga heterophylla, Abies spp., Picea sitchensis (1955--).

19. GEORGIA, UNIVERSITY OF, George Foster Peabody School of Forestry, Athens, Georgia. Cooperation with Georgia Experiment Station, Georgia Forest Research Council, Georgia Forestry Commission, Southeastern Forest Experiment Station. James T. Greene (1950--), L. W. R. Jackson (1950--), M. Reines (1954--), Boyd M. Witherow (1954--), B. Zak (1951--). Pinus echinata (1951--): \*Ind, CP, \*Veg, \*Rac, Orch; emphasis on littleleaf resistance. Pinus elliotii (1951--): Ind, CP, Cyt. P. taeda and palustris (1955--).

20. HARVARD UNIVERSITY, Maria Moors Cabot Foundation for Botanical Research; Arnold Arboretum, Jamaica Plain, Massachusetts; Harvard Forest, Petersham, Massachusetts. A. L. DeLisle (1937-1939), Paul Faunce (1937-1939), P. R. Gast (1937-1942), A. G. Johnson

(1948-1955), Scott S. Pauley (1947-1955), Karl Sax (1937--), K. V. Thimann (1937--), Martin Zimmerman (1954--). Acer spp. (1937--): Rac, SH, Tax. Catalpa spp. (1938-1942): \*SH, \*Cyt. Betula spp. (1947--): Rac, \*SH, CP. Fraxinus spp. (1939--): \*Rac, \*Cyt, \*sex-associated characters. Picea spp. (1948--): SH, Rac. Pinus (chiefly Haploxydon) (1948--): \*Cyt, Ind, \*Ex, \*SH, Rac, FI, \*Veg, \*seed-size influences. Populus spp. (1947--): \*Cyt, \*Ex, \*Rac, \*Clon, \*RH, \*SH, \*FI, Poly, \*Veg, Pollen, \*sex-associated characters, hermaphroditism, \*photoperiodism. Quercus (chiefly Erythrobalanus) (1947--): \*Rac, \*Veg, \*photoperiodism. The Arnold Arboretum maintains a large collection of living specimens of all hardy genera and has provided facilities for much taxonomic work on trees.

21. A. J. HODGES INDUSTRIES, INC, Shreveport, Louisiana, Field work done at Many, Louisiana, P. O. Box 648. Thomas E. Campbell (1952--). Cooperation with Southern Forest Experiment Station, Texas Forest Service, Louisiana State University. Pinus palustris, elliottii, taeda, and echinata (1952--): \*Rac.

22. INSTITUTE OF PAPER CHEMISTRY, Appleton, Wisconsin. Affiliated with Lawrence College, and supported by most of the pulp and paper companies in the country. Dean W. Einspahr (1955--), Philip N. Joransen (1954--at the Institute, 1952-1954 at Beloit College, working on the same problems). Populus tremuloides, grandidentata, and tremula (1952--): Poly, \*Wood, \*Chem, Cyt, SH, RH, Ex.

23. IOWA STATE COLLEGE, Department of Forestry, Ames, Iowa. Field plantings at Hopkinton, Farmington, and Chariton. A. L. McComb (1949--). Populus and Salix hybrids (1952--): \*Clon. Larix europea and Pinus sylvestris (1954--): Rac; field tests of 25 exotic conifers.

24. LAKE STATES FOREST TREE IMPROVEMENT COMMITTEE (1953--). Paul O. Rudolf, Lake States Forest Experiment Station, St. Paul Campus, University of Minnesota, St. Paul 1, Minnesota, is chairman. The committee is composed of 16 members representing states, universities, experiment stations, and forest industries. A forest tree improvement conference was held in 1953; another is to be held in 1955. Subcommittees are preparing reports on seed-collection zones, selection of superior trees and stands, a Lake States forest genetics bibliography, and other forest genetics projects.

25. LAVAL UNIVERSITY, Faculte d'Arpentage et de Genie Forestier, Quebec, P. Q., Canada. Levi Chouinard (1954--). Abies balsamea and Picea mariana (1954--): Veg, Poly. Arboretum (1954--).

26. MAINE, UNIVERSITY OF, Department of Forestry, Orono, Maine. R. I. Ashman (1930--). Picea abies and Pinus sylvestris (1930--): Rac. Pinus resinosa (1951--): Rac.

27. MARYLAND DEPARTMENT OF FORESTS AND PARKS, Annapolis, Maryland. A. R. Bond (1954--), H. C. Buckingham (1954--).



Pinus strobus (1954--): Ind, SH, Veg, CP; emphasis on blister rust resistance. Pinus resinosa (1954--): Ind, FI. Picea glauca (1955--): CP, Orch.

28. MASSACHUSETTS, UNIVERSITY OF, Forestry and Wildlife Department. Amherst, Mass. W. L. Doran (1939--). Pinus strobus (1939--): Ind, \*Veg, Clon; rooting studies of other forest trees.

29. MICHIGAN STATE COLLEGE, Department of Forestry Division of Conservation, East Lansing, Michigan. Field tests at Sault St. Marie and Augusta. M. W. Day (1938--), L. W. Gysel (1948-1951), W. Lemmien (1940--), P. W. Robbins (1927--). Acer saccharum (1938-1941): Veg; emphasis on "birds-eye" grain. Picea abies (1941-1944): Veg. Picea spp. and Pinus spp. (1927--): Ex. Pinus sylvestris (1951--): Rac. Populus hybrids (1936): Clon.

30. UNIVERSITY OF MICHIGAN, School of Natural Resources, Ann Arbor, Michigan. Biological Station, Cheboygan, Michigan. Cooperation with Lake States Forest Experiment Station. Dow V. Baxter (1928--), Samuel A. Graham (1928--), Stephen H. Spurr (1952--). Pinus sylvestris (1930--): \*Rac, Orch. Castanea spp. (1930--): Ex, Ind. Picea abies (1953--): CP, Ind; emphasis on gall aphid resistance. Larix (1953--): Rac. Pinus banksiana (1954--): Rac. Pinus ponderosa (1928--), and banksiana (1954--): Rac. Larix spp. (1953--): Rac.

31. MINNESOTA, UNIVERSITY OF, Institute of Agriculture, School of Forestry, St. Paul 1, Minnesota. Field stations or plantings at Cloquet, Grand Rapids, Rochester, Austin, and Rosemount. Cooperation with Lake States Forest Experiment Station. D. P. Duncan (1949--), R. A. Jensen (Cloquet, 1942--), Scott S. Pauley (1955--), T. Schantz-Hansen (Cloquet, 1942--), Picea pungens (1952--): Rac. Pinus banksiana (1942--): \*Rac. Pinus resinosa (1953--): \*Rac, \*Wood. Populus spp. and hybrids (1947--, Rochester and Rosemount): Clon. Tilia americana (1953--): Veg.

32. MISSISSIPPI FORESTRY COMMISSION, P. O. Box 649, Jackson, Mississippi. Cooperation with Mississippi State College. Roy C. Grigsby (1952--). Pinus taeda, palustris, elliottii, and glabra (1952--): Ind, CP, Veg. Robinia pseudoacacia, Castanea dentata, and Quercus falcata (1952--): Ind.

33. MISSISSIPPI STATE COLLEGE, Forestry Department, State College, Mississippi. Cooperation with Southern Forest Experiment Station. George L. Switzer (1952--). Pinus echinata and taeda (1949--): SH, backcrossing; (1952--): Rac. Pinus elliottii (1948--): Rac.

34. MISSOURI, UNIVERSITY OF, Department of Forestry, Columbia, Missouri. R. Brooks Polk (1952--). Pinus banksiana and sylvestris (1950--): Rac, Ind, CP; emphasis on Christmas trees.

35. NEW HAMPSHIRE FORESTRY AND RECREATION DEPARTMENT, Caroline A. Fox Research and Demonstration Forest, Hillsboro, New Hampshire. Henry I. Baldwin (1924--). Picea abies and Pinus

sylvestris (1933--): \*Rac. Larix europea (1946--): \*Rac. Pseudotsuga menziesii: Rac. Populus hybrids (1935--): \*Clon. Castanea hybrids: field tests. Studies of forest tree seed and seed certification.

36. NEW HAMPSHIRE, UNIVERSITY OF, Department of Forestry, Durham, New Hampshire. Stuart Dunn (1951--), H. B. Kriebel (1950-52), Clark L. Stevens (1951--). Acer saccharum (1951--): \*Ind, \*Veg; emphasis on sugar. Pinus strobus (1950-52):\*Ind, Veg; emphasis on resistance to white pine weevil.

37. STATE UNIVERSITY OF NEW YORK, College of Forestry, Syracuse 10, New York. C. E. Farnsworth (1954--). R. R. Hirt (1932--). Cooperation with the Northeastern Forest Experiment Station. Populus and Castanea hybrids (1954--): field tests. Pinus, section Haploxylon (1932--): Ex; emphasis on blister rust resistance.

38. NEW YORK DIVISION OF LANDS AND FORESTS, Department of Conservation, Albany 1, New York. Field plantings over entire state. D. B. Cook, E. J. Eliason, E. W. Littlefield. Pinus \*strobus (1936--), sylvestris (1935--), \*resinosa (1932--), banksiana (1935--), rigida (1938--), nigra (1936--), and \*thunbergii (1935--); Picea abies (1931--) and glauca (1937--); Pseudotsuga menziesii (1936--); Larix \*europea (1935--) and leptolepis (1935--): Rac.

39. NORTH CAROLINA STATE COLLEGE, School of Forestry, Raleigh, North Carolina. Cooperation with the states of North and South Carolina, Southeastern Forest Experiment Station, and Atomic Energy Commission. Field plantings located in Chatham, Durham, and Johnston Counties. T. E. Maki (1953--), G. K. Slocum (1953--), Pinus taeda, echinata, and palustris (1953--): Rac, Ind; field tests of Placerville hybrids. Pinus strobus (1955--): Rac, Ind.

40. NORTHEASTERN FOREST TREE IMPROVEMENT CONFERENCE (1953). E. J. Schreiner, Northeastern Forest Experiment Station, 102 Motors Avenue, Upper Darby, Pennsylvania, is executive secretary. The Conference holds annual meetings, publishes proceedings, and sponsors special reports on subjects of region-wide interest. The conference (membership open to all) is composed primarily of people from research agencies, forest schools, and forest industries in the region.

41. OHIO AGRICULTURAL EXPERIMENT STATION, Department of Forestry, Wooster, Ohio. H. B. Kriebel (1953--). Acer saccharum (1953--): Ind, CP, Veg, Rac.

42. OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE, Department of Forestry, Stillwater, Oklahoma. Cooperation with Southern Forest Experiment Station. Michael Afanasiev (1952--). Pinus echinata (1952--): Rac.

43. ONTARIO DEPARTMENT OF LANDS AND FORESTS, Division of Reforestation, Ontario Tree Seed Plant, Angus, Ontario, Canada. Cooperation with the University of Toronto and Canada. Depart-



ment of Northern Affairs and National Resources. A. J. Carmichael (1951--). Betula lutea (1953--): Ind, Veg. Picea glauca, Pinus sylvestris and resinosa (1952--): Rac, Ind. Pinus banksiana (1952--): Rac, Ind, Orch, FI. Pinus strobus (1952--): Rac, Ind, Veg.

44. ONTARIO DEPARTMENT OF LANDS AND FORESTS, Division of Research, Southern Research Station, Maple, Ontario. Cooperation with Petawawa Forest Experiment Station and with several pulp and paper companies. C. C. Heimburger (1946--). Pinus strobus (1946--): \*Ind, Rac, CP, \*Veg, Clon, Ex, \*SH, RH, FI, Orch; emphasis on resistance to blister rust and weevil. Pinus series Sylvestris (1952--): CP, Veg, Clon, Ind, SH, FI, Ex. Populus, section Leuce (1946--): Rac, CP, Veg, Clon, Cyt, Pollen, Wood, Ex, Ind, SH, RH, FI, Orch, Poly.

45. OREGON STATE BOARD OF FORESTRY, SALEM, OREGON. Dale N. Bever (1955--), Jack Gartz (1955--). Cooperation with other agencies in the region. Pseudotsuga menziesii (1955--): Rac.

46. OREGON STATE COLLEGE, School of Forestry and Botany Department, Corvallis, Oregon. Cooperation with Pacific Northwest Forest Experiment Station. G. H. Barnes (1943--), Helge Irgens-Moller (1954--), H. C. Owen (1952), W. R. Randall (1951--), T. J. Starker (1928-1942). Pinus ponderosa (1928): \*Rac. Pseudotsuga menziesii (1952--): Rac, Phys, morphology, Veg. Peavy Arboretum (1952--).

47. PENNSYLVANIA STATE UNIVERSITY, School of Forestry, Department of Forest Management, State College, Pennsylvania. W. C. Bramble (1952--). Pseudotsuga menziesii (1952--): \*Rac. Pinus sylvestris (1951--): Rac. Emphasis on Christmas trees.

48. PENNSYLVANIA, UNIVERSITY OF, Morris Arboretum, Chestnut Hill, Philadelphia 18, Pa. Cooperation with Northeastern Forest Experiment Station and American Philosophical Society. David Hammond (1953-1955), H. L. Li (1953--). Michaux Quercetum (1953--): a collection of 5 races per species of all hardy oaks, collection to be used for research on \*Rac, Tax, SH, Ex. The main arboretum collection (1885--) contains representatives of most hardy genera.

49. PURDUE UNIVERSITY, DEPARTMENTS OF BOTANY AND FORESTRY, W. Lafayette, Indiana. A. T. Guard (1950-52, Botany), J. W. Wright (1942-1945, Forestry). Acer saccharinum (1942-45): \*Ind. Ulmus spp. (1943-45): \*FI. Juglans nigra (1944--): \*Rac. Liriodendron tulipifera (1950-52): \*CP, \*Rac, \*selfing, compatibilities. \*Pollen-dispersion studies (1943-45).

50. QUETICO-SUPERIOR WILDERNESS RESEARCH CENTER, Ely, Minnesota. Clifford Ahlgren (1949--). Cooperation with the University of Wisconsin and the Iron Range Resources Commission. Pinus spp., Picea spp., Abies spp. (1949--): \*Veg, Orch, \*FI.

51. COMMITTEE ON SOUTHERN FOREST TREE IMPROVEMENT (1951--). Information about the Committee can be obtained from the Southern Institute of Forest Genetics, Southern Forest Experiment

Station, Gulfport, Mississippi. The Committee holds biennial conferences (open to all), publishes proceedings, sponsors reports on subjects of region-wide interest, and assists in the coordination of research programs involving several agencies (for example the Southwide racial study). The Committee is composed of members from industry, schools of forestry, and public research agencies.

52. TENNESSEE VALLEY AUTHORITY (U. S. Government), Division of Forestry Relations, Norris, Tennessee. L. F. Bailey (1944-1947), F. E. Blow (1944-1953), S. B. Chase (1939-1953), W. H. Cummings (1941-1953), B. W. Ellertsen (1938-1941, 1953--), J. W. Hershey (1934-1938), L. V. Kline (1936-1943), J. C. McDaniel (1935-1940), E. J. Schreiner (1935-1936), E. G. Wiesehuegel (1943--), T. G. Zarger (1940-1948, 1953--), C. H. Zavits (1935-1939). Pinus taeda, echinata and strobus (1950--): Rac, Ind, \*Veg. Juglans spp., Castanea mollissima hybrids, Carya spp., Corylus avellana, Diospyros spp. (1934--): Ind, Veg, Clon; emphasis on fruit characters. Gleditsia triacanthos (1934--): \*Ind, \*Veg, \*Clon; emphasis on fruit and thornlessness. Robinia pseudoacacia (1936--): \*Ind, \*Veg, \*Clon. Liriodendron tulipifera, Acer rubrum, Betula lutea (1946--): \*Wood, \*Ind, \*Veg, \*Clon; emphasis on figured grain. Juniperus virginiana (1954--): Rac. Large arboretum of black walnut selections, hickories, pecans, and pines.

53. TEXAS FOREST SERVICE, Forest Genetics Laboratory, College Station, Texas. Mrs. Lawrence S. Dillon (1953--), Ray E. Goddard (1952--), Bruce J. Zobel (1951--). Breeding arboretum located near Alto, Texas. Test plantations near Alto and in other localities. Pinus taeda, palustris, elliottii, and echinata (1951--): \*Rac, \*Clon, \*FI, \*Orch, \*Ind, \*Ex, CP, Veg, Phys, \*SH, Pollen. Emphasis on wood quality and drouth resistance in P. taeda. Arboretum contains about 50 species of pine.

54. TORONTO, UNIVERSITY OF, Faculty of Forestry, Glendon Hall, 1275 Bayview Ave., Toronto 5, Ontario, Canada. J. A. C. Grant (1953--). Populus tremuloides, Pinus banksiana and strobus, Picea glauca and mariana (1953--): Rac, photoperiodism.

55. UNITED STATES DEPARTMENT OF AGRICULTURE, Agricultural Research Service, Horticultural Crops Research Branch, Section of Fruit and Nut Crops, Agricultural Research Center, Beltsville, Maryland. F. H. Berry (1949--), R. B. Clapper (1927-1949), H. L. Crane (1929--), Jesse W. Diller (-----1953), G. F. Gravatt (1922--), J. W. McKay (1929--), Walter Van Fleet (-----1927). This agency includes work and personnel formerly in the Division of Forest Pathology and the Nut Crops Section of the former Bureau of Plant Industry. Castanea spp. (1922--): \*Ind, \*SH, \*CP, \*Veg, \*Clon, \*Ex. Carya spp. (1931--): \*SH, \*CP, \*Veg, \*Cyt, Poly, \*Pollen, \*Emb, Ex. Corylus spp. (1929--): \*Ind, \*SH, \*Veg, \*Cyt, \*Poly. Juglans spp. (1929--): \*SH, CP, \*Veg, \*Cyt, Poly, Emb. Emphasis on fruit quality in all genera.

56. UNITED STATES DEPARTMENT OF AGRICULTURE, Agricultural Research Service, Ornamental Crops Field Station,



Horticultural Crops Research Branch, P. O. Box 70, Worthington, Ohio. Toru Arisumi, (1954--), T. W. Bretz (1941--), Daniel Higgins (1954--), Roger U. Swingle (1941--). Ulmus spp. (1941--): Ind, SH, Cyt, FI, Veg; emphasis on resistance to Dutch elm disease and phloem necrosis.

57. UNITED STATES DEPARTMENT OF AGRICULTURE, Agricultural Research Service, Horticultural Crops Research Branch, Section of Fruit and Nut Crops, U. S. Pecan Field Station, P. O. Box 589, Brownwood, Texas. L. D. Romberg (1931--). Carya illinoensis (1931--): Ind, CP, Veg, FI; introduction of new pecan varieties for nut production.

58. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service, Region 1, Development and Improvement Project, Blister Rust Control, Spokane 4, Washington. (Formerly in Bureau of Entomology and Plant Quarantine.) Field plantings at Clarkia, Fernwood, Elk River, and Magee R. S., Idaho and Saltese, Montana. Cooperation with Intermountain Forest Experiment Station. R. T. Bingham (1949--). Pinus monticola (1949--): \*Ind, \*CP, \*sexual progeny and clonal tests, \*Veg, Rac, SH, RH, FI, \*selfing; emphasis on resistance to blister rust.

59. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service, California Forest and Range Experiment Station, P. O. Box 245, Berkeley 1, California. Most of the genetics work is carried on at the Institute of Forest Genetics, Placerville, California. Cooperation with several other agencies on pollination techniques, individual tree selection, field tests, and insect and disease resistance studies. Lloyd Austin (1925-1943), C. W. Busche (1954--), W. C. Cumming (1925--), J. W. Duffield (1946-1953), Earl Hodgkins (1940), E. F. Kimbrough (1937--), A. R. Liddicoet (1929--), N. T. Mirov (1937--), F. I. Richter (1931), K. Padgett, Jr. (1955--), Palmer Stockwell (1937-1950), R. H. Weidman (1939-1948). (Note: this personnel list does not include the many visitors who have worked at the Institute for varying periods of time.) Pinus spp., principally Haploxylon, Australes, Insignes, Macrocarpae (1925--): \*Poly, \*Pollen, Cyt, \*FI, \*Tax, \*Phys, \*Ex, \*SH, \*Veg, \*CP, \*Chem. Pinus ponderosa (1925--): RH, \*Rac, \*SH. Quercus suber (1949--): \*Veg. Pseudotsuga menziesii (1948-50): \*CP. Juglans (1925--): \*Clon, Ex, SH. Populus (1937): Clon, \*Embryo culture, mass production of hybrid seeds (P. jeffreyi x coulteri, P. ponderosa x latifolia). Arboretum (1925--) includes nearly all species of Pinus.

60. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service, Central States Forest Experiment Station, 111 Old Federal Building, Columbus, Ohio. Field work located at Athens, Ohio; Carbondale, Illinois; Columbia, Missouri; and Ames, Iowa, research centers. K. A. Brinkman, G. E. Champagne, A. G. Chapman, R. K. Day, G. H. Deitschman, R. F. Finn, J. A. Krajicek, R. D. Lane, F. G. Liming, G. A. Limstrom, R. W. Merz, L. S. Minckler, and N. P. Rogers (all started genetics work in 1951 or 1952). Liriodendron tulipifera; Juniperus virginiana; Pinus banksiana, echinata, and taeda; Robinia pseudoacacia (1951--): Rac. Castanea Pinus, and Populus (1951--): field tests of species hybrids.

61. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service, Intermountain Forest and Range Experiment Station, Forest Service Building, 25th Street and Adams Avenue, Ogden, Utah. Most of the genetics work is carried on at the Inland Empire Research Center at Spokane, Washington (white pine), and at the Missoula Research Center, Montana (other species); field plantings at eight localities in northern Idaho and western Montana. Donald W. Lynch (1953-54), A. E. Squillace (1948--), David Tackle (1954--), R. H. Weidman (1939). At times other station personnel were engaged on the ponderosa pine study. Pinus contorta (1948--): SH, CP. Pinus ponderosa (1911--): \*Rac, \*Ind, SH, RH, CP. Pinus monticola in cooperation with Region 1, U. S. Forest Service (1949--): \*Ind, SH, CP, heritability of growth characters, seed studies. Field tests of Placerville hybrids. Priest River Arboretum contains about 50 coniferous species.

62. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service Lake States Forest Experiment Station, St. Paul Campus, University of Minnesota, St. Paul 1, Minnesota. Field Plantings on 16 university, county, state, and national forests in Michigan, Wisconsin, Minnesota, and North Dakota. Cooperation with Michigan and Wisconsin Conservation Departments; Nekoosa-Edwards Paper Co.; Mosinee Pulp and Paper Co.; Burnett and Marinette Counties, Wisconsin; Universities of Michigan and Minnesota. C. G. Bates (1928-1934), L. A. Holmberg (1928-1930), Hans Nienstaedt (1955--), P. O. Rudolf (1931--). Acer saccharum (1928): CP, Veg. Fraxinus pennsylvanica (1934-1936): \*Rac, \*Phys. Picea abies and glauca (1931--); Pinus banksiana (1935--), ponderosa (1937--), and sylvestris (1928--); Larix decidua (1945--): \*Rac. Pinus resinosa (1928--): \*Rac, Ind, Phys. Pinus spp. (1950--): field tests of Placerville hybrids. Populus spp. (1935-1950): Clon. More than 100 exotic species have been planted.

63. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service, Northeastern Forest Experiment Station, 102 Motors Ave., Upper Darby, Pennsylvania. Crossing and nursery work carried on near Philadelphia; field plantings located at nine localities in Maine, Massachusetts, New Jersey, Pennsylvania and Maryland. Cooperation with the Morris Arboretum of the University of Pennsylvania, State University of New York, Oxford Paper Co., states of New York, New Hampshire, New Jersey, Maryland. F. E. Cunningham (1946--), J. D. Diller (1953--), J. W. Duffield (1939-1942), L. J. Edgerton (1943-1946), H. F. Ford (1937--), W. J. Gabriel (1954--), A. F. Hough (1949-1950), Silas Little (1952--), H. F. Marco (1937-1939), E. J. Schreiner (1937--), A. G. Snow (1937-1942), J. W. Wright (1946--). Acer spp. (1937): \*SH, \*Veg, Cyt, Ex. Acer saccharum (1938-1941, 1948--): Ind, Veg; emphasis on sugar. Betula spp. (1937--): \*SH Veg. Castanea spp. (1953--): \*field tests of hybrids. Fraxinus americana and pennsylvanica (1937--): \*SH, Veg, \*Rac, \*Cyt, Tax, Ex. Liriodendron tulipifera (1938-1950): \*CP, \*Ex. Populus spp. (1937--): \*SH, \*Clon, \*Poly, Ex, Veg, Cyt, Sex, Wood. Quercus spp. (1937-1950): \*SH, \*Cyt. Picea spp. (1938--): \*SH, \*Tax, Ex. Pinus, series Strobi and Sylvestres (1937--): \*SH, \*Veg, \*Ex, Tax. Pinus resinosa (1936--): \*Rac. Pinus strobus (1952--): Ind, Rac, \*SH, RH, Veg, Rac; emphasis on resistance to white pine weevil. Abies (1947-1948), Fagus and Magnolia (1938-1940): CP.



64. U. S. DEPARTMENT OF AGRICULTURE, Pacific Northwest Forest and Range Experiment Station, 729 N. E. Oregon Street, P. O. Box 4059, Portland 8, Oregon. Field plantings of racial tests located on the Gifford Pinchot, Mt. Hood, Siuslaw, Mt. Baker, Deschutes, and Whitman National Forests and on the school forests of the University of Washington, Oregon State College, and Washington State College. Cooperation with Oregon State College (Silen located there), City of Portland (in establishment of Hoyt Arboretum), Manning Seed Co. (establishment of first commercial seed orchard), and with various forest industries. E. H. Frothingham (1909), J. V. Hofmann (1913-1924), L. A. Isaac (1924--), C. J. Kraebel (1913-1917), E. L. Kolbe (1928-1940), W. G. Morris (1931--), T. T. Munger (1912-1947), R. R. Silen (1954--), R. H. Weidman (1912-1916), R. H. Westveld (1925-1928), C. P. Willis (1912-1917). Pseudotsuga menziesii (1912--): \*Rac, FI, Clon, Cyt, \*Orch, Pollen, \*Wood, \*Ex. Pinus ponderosa (1912--): \*Rac. Pinus, Haploxydon (1932--): \*Ex; emphasis on blister rust resistance. Wind River Arboretum contains 135 species or varieties of conifers.

65. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service, Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina. Field work done at six research centers in Virginia, North Carolina, South Carolina, Georgia, and Florida. Cooperation with Ida Cason Calloway Foundation, Florida Board of Forestry, Georgia Forest Research Council, University of Georgia, Harvard University, and Tennessee Valley Authority. John C. Barber (1954--), Keith W. Dorman (1942--), G. H. Hepting (1939--), Francois Mergen (1951-1954), H. L. Mitchell (1941-1942), Kenneth B. Pomeroy (1947--), C. S. Schopmeyer (1942--), A. G. Snow (1943-1952), E. R. Toole (1939-1950), Karl F. Wenger (1952--), B. Zak (1951--). Pinus palustris (1935--): Rac, \*Ind, \*CP, Veg, Clon; emphasis on naval stores. Pinus elliotii (1941--): \*Rac, \*Ind, \*CP, \*Veg, \*Orch, \*Tax, Clon; emphasis on naval stores and form. P. echinata (1935--): \*Rac, Ind, CP, Veg; emphasis on resistance to littleleaf disease. Quercus borealis (1951--): Rac. Albizzia spp. (1939-1954); \*Ind; emphasis on resistance to wilt. Castanea spp. (1935-1954): \*Ind, \*SH, \*RH, \*CP; emphasis on blight resistance. Castanea and Albizzia work now carried on by Agricultural Research Service. Populus hybrids: \*Clon.

66. UNITED STATES DEPARTMENT OF AGRICULTURE, Forest Service, Southern Forest Experiment Station, 704 Lowich Building 2026 St. Charles Avenue, New Orleans 13, Louisiana. Field work done at Southern Institute of Forest Genetics, 3505 25th Avenue, Gulfport, Mississippi, and at eight other research centers in Alabama, Arkansas, Florida, Louisiana, and Mississippi. Cooperation with the Crossett Lumber Company, Gaylord Container Corporation, A. J. Hodges Industries, Inc., Tennessee Valley Authority, University of Arkansas, Alabama Polytechnic Institute, and with other members of the Committee on Southern Forest Tree Improvement. Robert M. Allen (1949--), John F. Coyne (1954--), Harold J. Derr (1950--), Berch W. Henry (1952--), Roland E. Schoenike (1952--), V. H. Siggers (1937-1952), E. Bayne Snyder (1955--), Philip C. Wakeley (1925--). Pinus echinata and taeda (15 origins each), palustris (14 origins), and elliottii (6 origins) (1952--): \*Rac; an extensive

series of uniformly established racial tests (called the Southwide Study) planted in 66 localities in 16 states under the sponsorship of the Committee on Southern Forest Tree Improvement, with many cooperating agencies. Pinus principal southern species (1925--): \*Rac, Ex; (1928-1931, 1952--): SH; (1937-1938, 1952--): Ind; (1952--): \*CP, FI, Veg, Poly, Pollen. Populus deltoides (1954--): Ind, Clon.

67. VERMONT, UNIVERSITY OF, Department of Botany, Burlington, Vermont. James W. Marvin (1944--), Fred H. Taylor (1944--). Acer saccharum (1944--): Ind, Phys, Veg, SH. The genetics work is part of a large-scale program on the physiology of maple sugar production.

68. VIRGINIA, UNIVERSITY OF, The Blandy Experimental Farm, Boyce, Virginia. W. S. Flory, Jr. (1947--), O. E. White (1927-55). Quercus spp. (1947--): Ind, CP, studies of natural hybrids. Pinus, Cupressus, Taxodium, Juniperus, Cedrus, Abies, Picea, Cunninghamia, Cryptomeria spp. (1949-52): Cyt, distribution, evolution. Pinus spp. (1949-52): SH. The 130-acre arboretum contains approximately 500 tree species.

69. WASHINGTON, STATE COLLEGE OF, Department of Forestry and Range Management. Richard W. Dingle (1954--). Pseudotsuga menziesii (1953--): Rac; emphasis on Christmas trees. Pinus ponderosa (1955--): Rac, Ind, Veg.

70. WASHINGTON, UNIVERSITY OF, College of Forestry, Seattle 5, Washington. Field plantings at La Grande and Maltby, Washington. R. K. Campbell (1954--), J. W. Duffield, (1953-54), S. P. Gessel (1953--), P. G. Haddock (1949-50). Pseudotsuga menziesii (1949--): Rac, FI, Clon, Veg, CP, Ind. Alnus (1949-1950): CP, Veg. Tests of various exotics (1928-- in the Pack Forest Arboretum and plantations.

71. WEST VIRGINIA PULP AND PAPER CO., Westvaco Experimental Forest, Georgetown, South Carolina. L. T. Easley (1950--), R. O. Gustafson (1953--), P. T. Lannan (1950--). Cooperation with Southeastern and Southern Forest Experiment Stations and others. Pinus taeda (1950--), palustris (1954--), elliottii (1954--): Rac, Ind, Veg, FI, CP, RH, Orch, Ex.

72. WEST VIRGINIA UNIVERSITY, Division of Forestry, Department of Horticulture and Plant Pathology. Cooperation with Soil Conservation Service and West Virginia Conservation Commission. O. M. Neal (1953--), R. W. Pease (1948--), R. P. True (1951--), E. H. Tryon (1946-1952). Ilex opaca (1946--): Rac, \*Ind, \*Veg. Castanea dentata (1938--): Ind, \*Veg. Robinia pseudoacacia (1947--): Ind, Veg, Clon, Orch. An arboretum is being established.

73. WISCONSIN, UNIVERSITY OF. Departments of Plant Pathology (white pine, poplars, juniper) and Genetics (red and jack pines, spruces), Madison 6, Wisconsin. R. A. Brink (1948--), R. R. Hartig (1953--), R. G. Hitt (1948--), J. E. Kuntz (1947--), R. F. Patton (1947--), A. J. Riker (1937--), K. R. Shea (1950--), J. E. Thomas (1945-1950). Field work done at Madison, Wisconsin Rapids, Boulder Junction, Sayner, Gordon, and other Wisconsin localities. Juniperus virginiana (1937--):



Ind, Ex; emphasis on resistance to cedar-apple rust. Picea glauca, mariana and abies (1952--): Rac, Ind, SH, CP, Veg, Ex. Pinus banksiana (1950--): Rac, Ind, SH, CP, Veg, Clon, Ex. Pinus resinosa (1948--): Rac, Ind, SH, RH, CP, FI, Veg, Clon, Orch, Ex. selfing. Pinus strobus (1937--): \*Ind, \*SH, \*RH, \*CP, FI, \*Veg, \*Clon, Ex, emphasis on blister rust resistance. Populus spp. (1947--): \*Ind, Rac, \*SH, \*RH, CP, FI, Clon, Pollen, Wood, Ex. Arboretum of principal northern genera being established.

74. YALE UNIVERSITY. School of Forestry, New Haven 11, Connecticut. Forest genetics research is carried out at the John A. Hartford Memorial Research Center, P. O. Box 56, Valhalla, New York. Francois Mergen (1954--). Proposed program (1954--') includes fundamental studies on FI, Rac, Veg, Pollen, CP, Ind, and establishment of an arboretum.



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